Preface

Trace elements are a vital ingredient in our food, which directly relates to our health and well-being. The study of health effects related to the abundance or deficiency of trace elements that we are exposed to in our daily life is of prime importance in order to understand mechanisms and interactions of those elements within the human body. Trace elements taken up with food may exert toxic actions (e.g., in the case of arsenic or mercury), others are essential and a deficiency in these trace elements (e.g., iron, selenium, zinc, or iodine) can have drastic health effects and cause diseases.

Therefore, toxic as well as essential aspects of trace elements must be studied and understood, so that regulating or governing bodies may advise on permissible levels for toxic elements, or recommend daily doses for the uptake of essential elements.

The 4th International Conference on Trace Elements in Food (TEF-4) addressed a range of issues related to the health effects of trace elements and provided a podium for researchers from different scientific backgrounds: analytical chemists, toxicologists, nutritionists, environmental scientists, and members of health authorities came together to present and discuss recent advances and findings.

The conference was held from 19 to 22 June 2011 in the King's Conference Centre at the University of Aberdeen in Scotland (UK), with Prof. John Beattie (Rowett Institute for Nutrition and Health/University of Aberdeen) and Prof. Jörg Feldmann (University of Aberdeen) acting as Conference Chairs. TEF-4 attracted 150 delegates from 39 countries; 38 oral lectures were presented, 13 of which were given by internationally renowned invited speakers. The scientific program also included a poster exhibition with 108 papers and was completed by 9 exhibiting sponsors, including major analytical instrument manufacturers and representatives of reference material laboratories and government institutes.

The scientific program comprised four larger themes, each of which was represented by invited speakers and further oral presentations on the following topics:

- source and transfer of trace elements into food and feed
- trace elements in nutrition and health
- toxicology and risk assessment of trace elements in food
- analytical advances in trace elements in food

Special attention was paid to selenium as an essential element, and a variety of talks explored the toxic actions of arsenic in different foodstuffs and in epidemiology, completed with topics on mercury, zinc, manganese, iodine, cerium, and other trace metals.

The collection of papers in this issue of *Pure and Applied Chemistry* is a representation of the main topics covered in the lectures held during TEF-4, providing an overview of recent advances in research techniques and findings. We hope that it proves a useful source of new and exciting results, leading the way into the future of food analysis, and that fruitful interdisciplinary collaboration will enhance the impact of fundamental and applied research.

Eva M. Krupp
Conference Editor